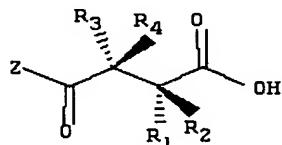


## CLAIMS

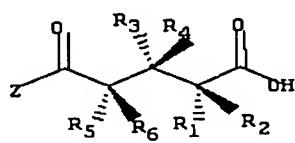
## What is claimed is:

1. A method for modulation of immune response by differentiation of dendritic cells, said method comprising the step of administration a pharmaceutical acceptable amount of a compound having general formula  $Z-OC(CR_{n1}R_{n2})-CO-Z$  wherein  $Z = OH$  or  $NH_2$  and  $n1 = n2 = 1$  to 8 and subject to need thereof optionally with an additive, excipient, diluents or carrier.
2. A method as claimed in claim 1, wherein said compound useful in vaccine formulation to prevent more efficient and faster presentation of antigens to T-cells thereby initiate primary protective Th1 immune response and help in the clearance of the pathogen.
3. A method as claimed in claim 1, wherein said compound having a structure as herein and bearing general formula  $ZOC-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$ , to  $R_4$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$



Structure 1

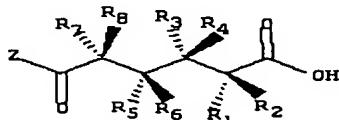
4. A method as claimed in claim 1, wherein said compound having a structure as herein and bearing general formula  $ZOC-CR_5R_6-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$  to  $R_6$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$



Structure 2

5. A method as claimed in claim 1, wherein said compound having structure as herein and bearing general formula  $ZOC-CR_7R_8-CR_5R_6-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$  to  $R_8$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$

5



STRUCTURE 3

6. A method as claimed in claim 1, wherein said compound is non-toxic to monocytes.

7. A method as claimed in claim 1, wherein said compound is non-toxic to 10 macrophages.

8. A method as claimed in claim 1, wherein additives are different divalent metal cations such as Mg, Ca and Zn.

9. A method as claimed in claim 1, wherein additives are amino acid/ dicarboxylic acid derivatives and their pharmaceutically acceptable selected alkali/ alkaline earth 15 metal salts.

10. A method as claimed in claim 3, wherein the compound is selected from the group consisting of:

- I. [L- Aspartic acid, N-Sulfonic acid],
- II. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],
- 20 III. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],
- IV. [1 $\alpha$ ,2-carboxy ethane sulfonic acid],
- V. [1 $\alpha$ ,2-carboxy ethane sulfate],
- VI. [D-aspartic acid, N-sulfonic acid],
- VII. [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],
- 25 VIII. [2 $\beta$ ,3-carboxy,propane-1-sulfate],
- IX. [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],
- X. [1 $\beta$ ,2-carboxy ethane-1-sulfate],

- XI. [D-aspartic acid, 3 $\alpha$  -sulfonic acid],
- XII. [D-aspartic acid, 3 $\alpha$ -sulfate],
- XIII. [D-aspartic acid, 3 $\beta$ -sulfonic acid],
- XIV. [D-aspartic acid, 3 $\beta$ -sulfate],
- 5 XV. [L-asparagine,N-sulfonic acid],
- XVI. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XVII. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVIII. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XIX. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],
- 10 XX. [L-asparagine, 3 $\alpha$ -sulfonic acid],
- XXI. [L-asparagine, 3 $\alpha$ -sulfate],
- XXII. [L-asparagine, 3 $\beta$ -sulfonic acid],
- XXIII. [L-asparagine, 3 $\beta$ -sulfate],
- XXIV. [D-asparagine, N-sulfonic acid],
- 15 XXV. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXVI. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXVII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XXVIII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],
- XXIX. [D-asparagine, 3 $\alpha$ -sulfonic acid],
- 20 XXX. [D-asparagine, 3 $\alpha$ -sulfate],
- XXXI. [D-asparagine, 3 $\beta$ -sulfonic acid],
- XXXII. [D-asparagine, 3 $\beta$ -sulfate],
- XXXIII. [L-glutamic acid, N-sulfonic acid],
- XXXIV. [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],
- 25 XXXV. [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],
- XXXVI. [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],
- XXXVII. [1 $\alpha$ , 3-dicarboxy, propane sulfate],
- XXXVIII. [1 $\beta$ , 3-dicarboxy, propane sulfate],
- XXXIX. [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],

11. A method as claimed in claim 4, wherein the compound is selected from the group consisting of:

- I. [D-glutamic acid, N-sulfonic acid],
- II.  $2\beta$ , 4-dicarboxy, butane-1-sulfonic acid],
- 5 III.  $[2\beta$ , 4-dicarboxy, butane-1-sulfate],
- IV. [D-glutamic acid,  $3\alpha$ -sulfonic acid],
- V. [D-glutamic acid,  $3\alpha$ -sulfate],
- VI. [D-glutamic acid,  $3\beta$ -sulfonic acid],
- VII. [D-glutamic acid,  $3\beta$ -sulfate],
- 10 VIII. [D-glutamic acid,  $4\alpha$ -sulfonic acid],
- IX. [D-glutamic acid,  $4\alpha$ -sulfate],
- X. [D-glutamic acid,  $4\beta$ -sulfonic acid],
- XI. [D-glutamic acid,  $3\beta$ -sulfate],
- XII. [L-glutamine, N-sulfonic acid],
- 15 XIII.  $[2\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XIV.  $[2\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XV.  $[1\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XVI.  $[1\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVII.  $[1\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- 20 XVIII.  $[1\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XIX. [D-glutamine, N-sulfonic acid],
- XX.  $[2\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XXI.  $[2\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XXII. [D-glutamine,  $3\alpha$ -sulfonic acid],
- 25 XXIII. [D-glutamine,  $3\alpha$ -sulfate],
- XXIV. [D-glutamine,  $3\beta$ -sulfonic acid],
- XXV. [D-glutamine,  $3\beta$ -sulfate],
- XXVI. [D-glutamine,  $4\alpha$ -sulfonic acid],
- XXVII. [D-glutamine,  $4\alpha$ -sulfate],
- 30 XXVIII. [D-glutamine,  $4\beta$ -sulfonic acid],

- XXIX. [D-glutamine, 4 $\beta$ -sulfate],
- XXX. [L-homoglutamic acid, N-sulfonic acid],
- XXXI. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],
- XXXII. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],

5 XXXIII. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],

- XXXIV. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],

XXXV. [D-homoglutamic acid, N-sulfonic acid],

XXXVI. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],

XXXVII. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],

10 XXXVIII. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],

XXXIX. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],

12. A method as claimed in claim 5, wherein the compound is selected from the group consisting of

I. [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],

15 II. [D-homoglutamic acid, 3 $\alpha$ -sulfate],

III. [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],

IV. [D-homoglutamic acid, 3 $\beta$ -sulfate],

V. [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],

VI. [D-homoglutamic acid, 4 $\alpha$ -sulfate],

20 VII. [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],

VIII. [D-homoglutamic acid, 4 $\beta$ -sulfate],

IX. [D-homoglutamic acid, 5 $\alpha$ -sulfate],

X. [D-homoglutamic acid, 5 $\alpha$ -sulfate],

XI. [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],

25 XII. [D-homoglutamic acid, 5 $\beta$ -sulfate],

XIII. [L-homoglutamine, N-sulfonic acid],

XIV. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],

XV. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],

XVI. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],

30 XVII. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],

XVIII. [D-homoglutamine, N-sulfonic acid],

XIX. [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],

XX. [Butane-1  $\beta$  -carboxy, 4-carboxamido-1-sulfonic acid],

XXI. [Butane-1  $\beta$  -carboxy, 4-carboxamido-1-sulfate],

5 XXII. [D-homoglutamine, 3 $\alpha$ -sulfonic acid],

XXIII. [D-homoglutamine, 3 $\alpha$ -sulfate],

XXIV. [D-homoglutamine, 3 $\beta$ -sulfonic acid],

XXV. [D-homoglutamine, 3 $\beta$ -sulfate],

XXVI. [D-homoglutamine, 4 $\alpha$ -sulfonic acid],

10 XXVII. [D-homoglutamine, 4 $\alpha$ -sulfate],

XXVIII. [D-homoglutamine, 4 $\beta$ -sulfonic acid],

XXIX. [D-homoglutamine, 4 $\beta$ -sulfate],

XXX. [D-homoglutamine, 5 $\alpha$ -sulfonic acid],

XXXI. [D-homoglutamine, 5 $\alpha$ -sulfate],

15 XXXII. [D-homoglutamine, 5 $\beta$ -sulfonic acid] and

XXXIII. [D-homoglutamine, 5 $\beta$ -sulfate].

13 . A method as claimed in claim 3, wherein novel sulfonic acid / sulfate derivatives of the formulae ZOC-CR<sub>3</sub>R<sub>4</sub>-CR<sub>1</sub>R<sub>2</sub>-COOH wherein: Z=OH or NH<sub>2</sub>, R<sub>1</sub>, to R<sub>4</sub> denotes H, NH<sub>2</sub>, SO<sub>3</sub>H, or OSO<sub>3</sub>H, CH<sub>2</sub>-SO<sub>3</sub>H , CH<sub>2</sub>-

20 OSO<sub>3</sub>H, NHSO<sub>3</sub>H

I. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

II. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

25 III. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

IV. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

V. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H,

30 R<sub>1</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

- VI. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;
- VII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;
- 5 VIII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;
- IX. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;
- 10 X. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;
- XI. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;
- XII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;
- 15 XIII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;
- XIV. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;
- XV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $20 R_1=NHSO_3H$  is the same meaning as is before defined;
- XVI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $R_1=CH_2SO_3H$  is the same meaning as is before defined;
- XVII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;
- 25 XVIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;
- XIX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;
- XX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $30 R_3=SO_3H$  is the same meaning as is before defined;

XXI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

XXII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

5 XXIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

XXIV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

10 XXV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

XXVI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;

XXVII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

15 XXVIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

XXIX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

20 XXX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

XXXI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

XXXII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined.

25 14. A method as claimed in claim 4, wherein novel sulfonic acid / sulfate derivatives of the formulae  $ZOC-CR_5R_6-CR_3R_4-CR_1R_2-COOH$ , wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$  to  $R_6$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$

I. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=NHSO_3H$  is the same meaning as is before defined;

30

- II. A compound as claimed in claim 1, wherein Z=OH,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=CH_2SO_3H$  is the same meaning as is before defined;
- III. A compound as claimed in claim 1, wherein Z=OH,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;
- 5 IV. A compound as claimed in claim 1, wherein Z=OH,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;
- V. A compound as claimed in claim 1, wherein Z=OH,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;
- 10 VI. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;
- VII. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;
- VIII. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;
- 15 IX. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;
- X. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;
- XI. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_4=R_5=R_6=H$ ,  $R_2=$   
20  $NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;
- XII. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_4=R_5=R_6=H$ ,  $R_2=$   $NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;
- XIII. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_5=R_6=H$ ,  $R_2=$   $NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;
- 25 XIV. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_3=R_5=R_6=H$ ,  $R_2=$   $NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;
- XV. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=$   $NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;
- XVI. A compound as claimed in claim 1, wherein Z=OH,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=$   
30  $NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

XVII. A compound as claimed in claim 1, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>6</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

XVIII. A compound as claimed in claim 1, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>6</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

5 XIX. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

XX. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

10 XXI. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

XXII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

15 XXIII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XXIV. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

20 XXV. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

XXVI. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

25 XXVII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

XXVIII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

30 XXIX. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>3</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

XXX. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>3</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XXXI. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>4</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

XXXII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>4</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XXXIII. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=R<sub>3</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>5</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

5 XXXIV. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=R<sub>3</sub>=R<sub>6</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>5</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XXXV. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>6</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

10 XXXVI. A compound as claimed in claim 1, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>5</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>6</sub>=OSO<sub>3</sub>H is the same meaning as is before defined.

15 15. A method as claimed in claim 5, wherein novel sulfonic acid / sulfate derivatives of the formulae ZOC-CR<sub>7</sub>R<sub>8</sub>-CR<sub>5</sub>R<sub>6</sub>-CR<sub>3</sub>R<sub>4</sub>-CR<sub>1</sub>R<sub>2</sub>-COOH, wherein: Z=OH or NH<sub>2</sub>, R<sub>1</sub>, to R<sub>8</sub> denotes H, NH<sub>2</sub>, SO<sub>3</sub>H, or OSO<sub>3</sub>H, CH<sub>2</sub>-SO<sub>3</sub>H, CH<sub>2</sub>-OSO<sub>3</sub>H, NHSO<sub>3</sub>H

I. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>1</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

15 II. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>1</sub>=-CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

III. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>1</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

20 IV. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>1</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

V. A compound as claimed in claim 1, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>1</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

25 VI. A compound as claimed in claim 1, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>2</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

VII. A compound as claimed in claim 1, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>2</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

VIII. A compound as claimed in claim 1, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=R<sub>7</sub>=R<sub>8</sub>=H, R<sub>2</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

IX. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

X. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

5 XI. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

XII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

10 XIII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

XIV. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

15 XV. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;

XVI. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

XVII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=SO_3H$  is the same meaning as is before defined;

20 XVIII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=OSO_3H$  is the same meaning as is before defined;

XIX. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=SO_3H$  is the same meaning as is before defined;

25 XX. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=OSO_3H$  is the same meaning as is before defined;

XXI. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=SO_3H$  is the same meaning as is before defined;

XXII. A compound as claimed in claim 1, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=OSO_3H$  is the same meaning as is before defined;

5 XXIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=NHSO_3H$  is the same meaning as is before defined;

XXIV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=CH_2SO_3H$  is the same meaning as is before defined;

10 XXV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;

XXVI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;

15 XXVII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;

XXVIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

20 XXIX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

XXX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

25 XXXI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

XXXII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

XXXIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

XXXIV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

XXXV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

5 XXXVI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;

10 XXXVII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

XXXVIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=SO_3H$  is the same meaning as is before defined;

15 XXXIX. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=OSO_3H$  is the same meaning as is before defined;

XL. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=SO_3H$  is the same meaning as is before defined;

20 XLI. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=OSO_3H$  is the same meaning as is before defined;

XLII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=SO_3H$  is the same meaning as is before defined;

25 XLIII. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=OSO_3H$  is the same meaning as is before defined;

16. A method as claimed in claim 10, wherein said compound is non-toxic salts selected from the group consisting of:

30 I. [L- Aspartic acid, N-Sulfonic acid],

II. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],

- III. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],
- IV. [1 $\alpha$ ,2-carboxy ethane sulfonic acid],
- V. [1 $\alpha$ ,2-carboxy ethane sulfate],
- VI. [D-aspartic acid, N-sulfonic acid],
- 5 VII. [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],
- VIII. [2 $\beta$ ,3-carboxy,propane-1-sulfate],
- IX. [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],
- X. [1 $\beta$ ,2-carboxy ethane-1-sulfate],
- XI. [D-aspartic acid, 3 $\alpha$  -sulfonic acid],
- 10 XII. [D-aspartic acid, 3 $\alpha$ -sulfate],
- XIII. [D-aspartic acid, 3 $\beta$ -sulfonic acid],
- XIV. [D-aspartic acid, 3 $\beta$ -sulfate],
- XV. [L-asparagine,N-sulfonic acid],
- XVI. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- 15 XVII. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVIII. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XIX. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],
- XX. [L-asparagine, 3 $\alpha$ -sulfonic acid],
- XXI. [L-asparagine, 3 $\alpha$ -sulfate],
- 20 XXII. [L-asparagine, 3 $\beta$ -sulfonic acid],
- XXIII. [L-asparagine, 3 $\beta$ -sulfate,
- XXIV. [D-asparagine, N-sulfonic acid],
- XXV. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXVI. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- 25 XXVII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XXVIII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],
- XXIX. [D-asparagine, 3 $\alpha$ -sulfonic acid],
- XXX. [D-asparagine, 3 $\alpha$ -sulfate],
- XXXI. [D-asparagine, 3 $\beta$ -sulfonic acid],
- 30 XXXII. [D-asparagine, 3 $\beta$ -sulfate],

- XXXIII. [L-glutamic acid, N-sulfonic acid],
- XXXIV. [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],
- XXXV. [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],
- XXXVI. [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],
- XXXVII. [1 $\alpha$ , 3-dicarboxy, propane sulfate],
- XXXVIII. [1 $\beta$ , 3-dicarboxy, propane sulfate],
- XXXIX. [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],

17. A method as claimed in claim 11, wherein said compound is non-toxic salts selected from the group consisting of:

- 10 I. [D-glutamic acid, N-sulfonic acid],
- II. [2 $\beta$ , 4-dicarboxy, butane-1-sulfonic acid],
- III. [2 $\beta$ , 4-dicarboxy, butane-1-sulfate],
- IV. [D-glutamic acid, 3 $\alpha$ -sulfonic acid],
- V. [D-glutamic acid, 3 $\alpha$ -sulfate],
- 15 VI. [D-glutamic acid, 3 $\beta$ -sulfonic acid],
- VII. [D-glutamic acid, 3 $\beta$ -sulfate],
- VIII. [D-glutamic acid, 4 $\alpha$ -sulfonic acid],
- IX. [D-glutamic acid, 4 $\alpha$ -sulfate],
- X. [D-glutamic acid, 4 $\beta$ -sulfonic acid],
- 20 XI. [D-glutamic acid, 3 $\beta$ -sulfate],
- XII. [L-glutamine, N-sulfonic acid],
- XIII. [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XIV. [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XV. [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- 25 XVI. [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVII. [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVIII. [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XIX. [D-glutamine, N-sulfonic acid],
- XX. [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- 30 XXI. [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],

- XXII. [D-glutamine, 3 $\alpha$ -sulfonic acid],
- XXIII. [D-glutamine, 3 $\alpha$ -sulfate],
- XXIV. [D-glutamine, 3 $\beta$ -sulfonic acid],
- XXV. [D-glutamine, 3 $\beta$ -sulfate],
- 5 XXVI. [D-glutamine, 4 $\alpha$ -sulfonic acid],
- XXVII. [D-glutamine, 4 $\alpha$ -sulfate],
- XXVIII. [D-glutamine, 4 $\beta$ -sulfonic acid],
- XXIX. [D-glutamine, 4 $\beta$ -sulfate],
- XXX. [L-homoglutamic acid, N-sulfonic acid],
- 10 XXXI. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],
- XXXII. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],
- XXXIII. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],
- XXXIV. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],
- XXXV. [D-homoglutamic acid, N-sulfonic acid],
- 15 XXXVI. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],
- XXXVII. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],
- XXXVIII. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],
- XXXIX. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],
- 18. A method as claimed in claim 12, wherein said compound is non-toxic salts  
20 selected from the group consisting of:
  - I. [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],
  - II. [D-homoglutamic acid, 3 $\alpha$ -sulfate],
  - III. [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],
  - IV. [D-homoglutamic acid, 3 $\beta$ -sulfate],
  - 25 V. [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],
  - VI. [D-homoglutamic acid, 4 $\alpha$ -sulfate],
  - VII. [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],
  - VIII. [D-homoglutamic acid, 4 $\beta$ -sulfate],
  - IX. [D-homoglutamic acid, 5 $\alpha$ -sulfate],
  - 30 X. [D-homoglutamic acid, 5 $\alpha$ -sulfate],

- XI. [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],
- XII. [D-homoglutamic acid, 5 $\beta$ -sulfate],
- XIII. [L-homoglutamine, N-sulfonic acid],
- XIV. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],
- 5 XV. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],
- XVI. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XVII. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],
- XVIII. [D-homoglutamine, N-sulfonic acid],
- XIX. [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],
- 10 XX. [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XXI. [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfate],
- XXII. [D-homoglutamine, 3 $\alpha$ -sulfonic acid],
- XXIII. [D-homoglutamine, 3 $\alpha$ -sulfate],
- XXIV. [D-homoglutamine, 3 $\beta$ -sulfonic acid],
- 15 XXV. [D-homoglutamine, 3 $\beta$ -sulfate],
- XXVI. [D-homoglutamine, 4 $\alpha$ -sulfonic acid],
- XXVII. [D-homoglutamine, 4 $\alpha$ -sulfate],
- XXVIII. [D-homoglutamine, 4 $\beta$ -sulfonic acid],
- XXIX. [D-homoglutamine, 4 $\beta$ -sulfate],
- 20 XXX. [D-homoglutamine, 5 $\alpha$ -sulfonic acid],
- XXXI. [D-homoglutamine, 5 $\alpha$ -sulfate],
- XXXII. [D-homoglutamine, 5 $\beta$ -sulfonic acid] and
- XXXIII. [D-homoglutamine, 5 $\beta$ -sulfate].

19. A method as claimed in claim 16, wherein said compound is selected from the group

25 consisting of aspartic acid, asparagine and corresponding de-amino analogs:

- I. [L- Aspartic acid, N-Sulfonic acid],
- II. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],
- III. [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],
- IV. [1 $\alpha$ ,2-carboxy ethane sulfonic acid],
- 30 V. [1 $\alpha$ ,2-carboxy ethane sulfate],

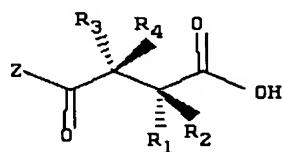
- VI. [D-aspartic acid, N-sulfonic acid],
- VII. [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],
- VIII. [2 $\beta$ ,3-carboxy,propane-1-sulfate],
- IX. [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],
- 5 X. [1 $\beta$ ,2-carboxy ethane-1-sulfate],
- XI. [D-aspartic acid, 3 $\alpha$  -sulfonic acid],
- XII. [D-aspartic acid, 3 $\alpha$ -sulfate],
- XIII. [D-aspartic acid, 3 $\beta$ -sulfonic acid],
- XIV. [D-aspartic acid, 3 $\beta$ -sulfate],
- 10 XV. [L-asparagine,N-sulfonic acid],
- XVI. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XVII. [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVIII. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XIX. [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],
- 15 XX. [L-asparagine, 3 $\alpha$ -sulfonic acid],
- XXI. [L-asparagine, 3 $\alpha$ -sulfate],
- XXII. [L-asparagine, 3 $\beta$ -sulfonic acid],
- XXIII. [L-asparagine, 3 $\beta$ -sulfate],
- XXIV. [D-asparagine, N-sulfonic acid],
- 20 XXV. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXVI. [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXVII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XXVIII. [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],
- XXIX. [D-asparagine, 3 $\alpha$ -sulfonic acid],
- 25 XXX. [D-asparagine, 3 $\alpha$ -sulfate],
- XXXI. [D-asparagine, 3 $\beta$ -sulfonic acid],
- XXXII. [D-asparagine, 3 $\beta$ -sulfate],
- 20. A method as claimed in claim 17, wherein said compound is selected from the group consisting of glutamic acid, glutamine and corresponding de-amino analogs:
- 30 I. [L-glutamic acid, N-sulfonic acid],

- II. [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],
- III. [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],
- IV. [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],
- V. [1 $\alpha$ , 3-dicarboxy, propane sulfate],
- 5 VI. [1 $\beta$ , 3-dicarboxy, propane sulfate],
- VII. [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],
- VIII. [D-glutamic acid, N-sulfonic acid],
- IX. [2 $\beta$ , 4-dicarboxy, butane-1-sulfonic acid],
- X. [2 $\beta$ , 4-dicarboxy, butane-1-sulfate],
- 10 XI. [D-glutamic acid, 3 $\alpha$ -sulfonic acid],
- XII. [D-glutamic acid, 3 $\alpha$ -sulfate],
- XIII. [D-glutamic acid, 3 $\beta$ -sulfonic acid],
- XIV. [D-glutamic acid, 3 $\beta$ -sulfate],
- XV. [D-glutamic acid, 4 $\alpha$ -sulfonic acid],
- 15 XVI. [D-glutamic acid, 4 $\alpha$ -sulfate],
- XVII. [D-glutamic acid, 4 $\beta$ -sulfonic acid],
- XVIII. [D-glutamic acid, 3 $\beta$ -sulfate],
- XIX. [L-glutamine, N-sulfonic acid],
- XX. [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- 20 XXI. [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XXII. [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXIII. [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXIV. [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXV. [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- 25 XXVI. [D-glutamine, N-sulfonic acid],
- XXVII. [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XXVIII. [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XXIX. [D-glutamine, 3 $\alpha$ -sulfonic acid],
- XXX. [D-glutamine, 3 $\alpha$ -sulfate],
- 30 XXXI. [D-glutamine, 3 $\beta$ -sulfonic acid],

XXXII. [D-glutamine, 3 $\beta$ -sulfate],  
XXXIII. [D-glutamine, 4 $\alpha$ -sulfonic acid],  
XXXIV. [D-glutamine, 4 $\alpha$ -sulfate],  
XXXV. [D-glutamine, 4 $\beta$ -sulfonic acid],  
5 XXXVI. [D-glutamine, 4 $\beta$ -sulfate],  
XXXVII. [L-homoglutamic acid, N-sulfonic acid],  
XXXVIII. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],  
XXXIX. [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],  
10 XL. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],  
XLI. [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],  
21. A method as claimed in claim 18, wherein said compound is selected from the group consisting of homoglutamic acid, homoglutamine and corresponding de-amino analogs:  
I. [D-homoglutamic acid, N-sulfonic acid],  
15 II. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],  
III. [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],  
IV. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],  
V. [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],  
VI. [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],  
20 VII. [D-homoglutamic acid, 3 $\alpha$ -sulfate],  
VIII. [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],  
IX. [D-homoglutamic acid, 3 $\beta$ -sulfate],  
X. [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],  
XI. [D-homoglutamic acid, 4 $\alpha$ -sulfate],  
25 XII. [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],  
XIII. [D-homoglutamic acid, 4 $\beta$ -sulfate],  
XIV. [D-homoglutamic acid, 5 $\alpha$ -sulfate],  
XV. [D-homoglutamic acid, 5 $\alpha$ -sulfate],  
XVI. [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],  
30 XVII. [D-homoglutamic acid, 5 $\beta$ -sulfate],

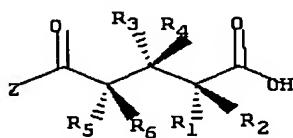
- XVIII. [L-homoglutamine, N-sulfonic acid],
- XIX. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],
- XX. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],
- XXI. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],
- 5 XXII. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],
- XXIII. [D-homoglutamine, N-sulfonic acid],
- XXIV. [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],
- XXV. [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XXVI. [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfate],
- 10 XXVII. [D-homoglutamine, 3 $\alpha$ -sulfonic acid],
- XXVIII. [D-homoglutamine, 3 $\alpha$ -sulfate],
- XXIX. [D-homoglutamine, 3 $\beta$ -sulfonic acid],
- XXX. [D-homoglutamine, 3 $\beta$ -sulfate],
- XXXI. [D-homoglutamine, 4 $\alpha$ -sulfonic acid],
- 15 XXXII. [D-homoglutamine, 4 $\alpha$ -sulfate],
- XXXIII. [D-homoglutamine, 4 $\beta$ -sulfonic acid],
- XXXIV. [D-homoglutamine, 4 $\beta$ -sulfate],
- XXXV. [D-homoglutamine, 5 $\alpha$ -sulfonic acid],
- XXXVI. [D-homoglutamine, 5 $\alpha$ -sulfate],
- 20 XXXVII. [D-homoglutamine, 5 $\beta$ -sulfonic acid] and
- XXXVIII. [D-homoglutamine, 5 $\beta$ -sulfate].
- 22. Use of a composition comprising general formula Z-OC (C R<sub>n1</sub>R<sub>n2</sub>)-CO-Z wherein Z = OH or NH<sub>2</sub> and n1 = n2 = 1 to 8 together with an additive, excipient, diluents or carrier for modulation of immune response by differentiation of dendritic cells, 25 by administration a pharmaceutical acceptable amount to a subject need thereof.
- 23. Use of the composition as claimed in claim 22, wherein said compound useful in vaccine formulation to prevent more efficient and faster presentation of antigens to T-cells thereby initiate primary protective Th1 immune response and help in the clearance of the pathogen.

24. Use of the composition as claimed in claim 22, wherein said compound having a structure as herein and bearing general formula  $ZOC-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$ , to  $R_4$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$



Structure 1

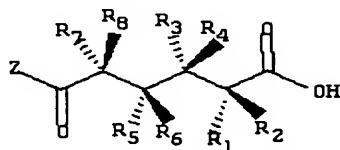
5 25. Use of the composition as claimed in claim 22, wherein said compound having a structure as herein and bearing general formula  $ZOC-CR_5R_6-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$  to  $R_6$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$



Structure 2

10 26. Use of the composition as claimed in claim 22, wherein said compound having a structure as herein and bearing general formula  $ZOC-CR_7R_8-CR_5R_6-CR_3R_4-CR_1R_2-COOH$  wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$  to  $R_8$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$

15



Structure 3

27. Use of the composition as claimed in claim 22, wherein said compound is non-toxic to monocytes.
28. Use of the composition as claimed in claim 22, wherein said compound is non-toxic to macrophages.
- 5 29. Use of the composition as claimed in claim 22, wherein additives are different divalent metal cations such as Mg, Ca and Zn.
30. Use of the composition as claimed in claim 22, wherein additives are amino acid/ dicarboxylic acid derivatives and their pharmaceutically acceptable selected alkali/ alkaline earth metal salts.
- 10 31. Use of the composition as claimed in claim 22, wherein the compound is selected from the group consisting of:
  - I [L- Aspartic acid, N-Sulfonic acid],
  - II [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],
  - III [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],
  - 15 IV [1 $\alpha$ ,2-carboxy ethane sulfonic acid],
  - V [1 $\alpha$ ,2-carboxy ethane sulfate],
  - VI [D-aspartic acid, N-sulfonic acid],
  - VII [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],
  - VIII [2 $\beta$ ,3-carboxy,propane-1-sulfate],
  - 20 IX [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],
  - X [1 $\beta$ ,2-carboxy ethane-1-sulfate],
  - XI [D-aspartic acid, 3 $\alpha$  -sulfonic acid],
  - XII [D-aspartic acid, 3 $\alpha$ -sulfate],
  - XIII [D-aspartic acid, 3 $\beta$ -sulfonic acid],
  - 25 XIV [D-aspartic acid, 3 $\beta$ -sulfate],
  - XV [L-asparagine,N-sulfonic acid],
  - XVI [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
  - XVII [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
  - XVIII [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],
  - 30 XIX [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],

- XX [L-asparagine, 3 $\alpha$ -sulfonic acid],
- XXI [L-asparagine, 3 $\alpha$ -sulfate],
- XXII [L-asparagine, 3 $\beta$ -sulfonic acid],
- XXIII [L-asparagine, 3 $\beta$ -sulfate],
- 5 XXIV [D-asparagine, N-sulfonic acid],
  - XXV [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
  - XXVI [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
  - XXVII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],
  - XXVIII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],
- 10 XXIX [D-asparagine, 3 $\alpha$ -sulfonic acid],
  - XXX [D-asparagine, 3 $\alpha$ -sulfate],
  - XXXI [D-asparagine, 3 $\beta$ -sulfonic acid],
  - XXXII [D-asparagine, 3 $\beta$ -sulfate],
  - XXXIII [L-glutamic acid, N-sulfonic acid],
- 15 XXXIV [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],
  - XXXV [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],
  - XXXVI [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],
  - XXXVII [1 $\alpha$ , 3-dicarboxy, propane sulfate],
  - XXXVIII [1 $\beta$ , 3-dicarboxy, propane sulfate],
- 20 XXXIX [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],
  - 32. Use of the composition as claimed in claim 22, wherein the compound is selected from the group consisting of:
    - I [D-glutamic acid, N-sulfonic acid],
    - II 2 $\beta$ , 4-dicarboxy, butane-1-sulfonic acid],
- 25 III [2 $\beta$ , 4-dicarboxy, butane-1-sulfate],
  - IV [D-glutamic acid, 3 $\alpha$ -sulfonic acid],
  - V [D-glutamic acid, 3 $\alpha$ -sulfate],
  - VI [D-glutamic acid, 3 $\beta$ -sulfonic acid],
  - VII [D-glutamic acid, 3 $\beta$ -sulfate],
- 30 VIII [D-glutamic acid, 4 $\alpha$ -sulfonic acid],

- IX [D-glutamic acid, 4 $\alpha$ -sulfate],
- X [D-glutamic acid, 4 $\beta$ -sulfonic acid],
- XI [D-glutamic acid, 3 $\beta$ -sulfate],
- XII [L-glutamine, N-sulfonic acid],
- 5 XIII [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XIV [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XV [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XVI [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVII [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- 10 XVIII [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XIX [D-glutamine, N-sulfonic acid],
- XX [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XXI [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XXII [D-glutamine, 3 $\alpha$ -sulfonic acid],
- 15 XXIII [D-glutamine, 3 $\alpha$ -sulfate],
- XXIV [D-glutamine, 3 $\beta$ -sulfonic acid],
- XXV [D-glutamine, 3 $\beta$ -sulfate],
- XXVI [D-glutamine, 4 $\alpha$ -sulfonic acid],
- XXVII [D-glutamine, 4 $\alpha$ -sulfate],
- 20 XXVIII [D-glutamine, 4 $\beta$ -sulfonic acid],
- XXIX [D-glutamine, 4 $\beta$ -sulfate],
- XXX [L-homoglutamic acid, N-sulfonic acid],
- XXXI [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],
- XXXII [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],
- 25 XXXIII [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],
- XXXIV [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],
- XXXV [D-homoglutamic acid, N-sulfonic acid],
- XXXVI [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],
- XXXVII [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],
- 30 XXXVIII [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],

XXXIX [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],

33. Use of the composition as claimed in claim 22, wherein the compound is selected from the group consisting of

XXXIV. [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],

5 XXXV. [D-homoglutamic acid, 3 $\alpha$ -sulfate],

XXXVI. [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],

XXXVII. [D-homoglutamic acid, 3 $\beta$ -sulfate],

XXXVIII. [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],

XXXIX. [D-homoglutamic acid, 4 $\alpha$ -sulfate],

10 XL. [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],

XLI. [D-homoglutamic acid, 4 $\beta$ -sulfate],

XLII. [D-homoglutamic acid, 5 $\alpha$ -sulfate],

XLIII. [D-homoglutamic acid, 5 $\alpha$ -sulfate],

XLIV. [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],

15 XLV. [D-homoglutamic acid, 5 $\beta$ -sulfate],

XLVI. [L-homoglutamine, N-sulfonic acid],

XLVII. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],

XLVIII. [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],

XLIX. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],

20 L. [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],

LI. [D-homoglutamine, N-sulfonic acid],

LII. [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],

LIII. [Butane-1  $\beta$  -carboxy, 4-carboxamido-1-sulfonic acid],

LIV. [Butane-1  $\beta$  -carboxy, 4-carboxamido-1-sulfate],

25 LV. [D-homoglutamine, 3 $\alpha$ -sulfonic acid],

LVI. [D-homoglutamine, 3 $\alpha$ -sulfate],

LVII. [D-homoglutamine, 3 $\beta$ -sulfonic acid],

LVIII. [D-homoglutamine, 3 $\beta$ -sulfate],

LIX. [D-homoglutamine, 4 $\alpha$ -sulfonic acid],

30 LX. [D-homoglutamine, 4 $\alpha$ -sulfate],

- LXI. [D-homoglutamine, 4 $\beta$ -sulfonic acid],
- LXII. [D-homoglutamine, 4 $\beta$ -sulfate],
- LXIII. [D-homoglutamine, 5 $\alpha$ -sulfonic acid],
- LXIV. [D-homoglutamine, 5 $\alpha$ -sulfate],
- 5 LXV. [D-homoglutamine, 5 $\beta$ -sulfonic acid] and
- LXVI. [D-homoglutamine, 5 $\beta$ -sulfate].
- 34. Use of the composition as claimed in claim 22, wherein novel sulfonic acid / sulfate derivatives of the formulae ZOC-CR<sub>3</sub>R<sub>4</sub>-CR<sub>1</sub>R<sub>2</sub>-COOH wherein: Z=OH or NH<sub>2</sub>, R<sub>1</sub>, to R<sub>4</sub> denotes H, NH<sub>2</sub>, SO<sub>3</sub>H, or OSO<sub>3</sub>H, CH<sub>2</sub>-SO<sub>3</sub>H,
- 10 CH<sub>2</sub>-OSO<sub>3</sub>H, NHSO<sub>3</sub>H
- XXXIII. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;
- XXXIV. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;
- 15 XXXV. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;
- XXXVI. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>1</sub>=SO<sub>3</sub>H is the same meaning as is before defined;
- XXXVII. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=H,
- 20 R<sub>1</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;
- XXXVIII. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;
- XXXIX. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=
- 25 CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;
- XL. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;
- XLI. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=SO<sub>3</sub>H is the same meaning as is before defined;
- XLII. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H,
- 30 R<sub>2</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XLIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  
 $R_3=SO_3H$  is the same meaning as is before defined;

XLIV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  
 $R_3=SO_3H$  is the same meaning as is before defined;

5 XLV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  
 $R_4=SO_3H$  is the same meaning as is before defined;

XLVI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  
 $R_4=OSO_3H$  is the same meaning as is before defined;

10 XLVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  
 $R_1=NHSO_3H$  is the same meaning as is before defined;

XLVIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  
 $R_1=CH_2SO_3H$  is the same meaning as is before defined;

15 XLIX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  $R_1=$   
 $CH_2OSO_3H$  is the same meaning as is before defined;

L. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  
 $R_1=SO_3H$  is the same meaning as is before defined;

20 LI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=H$ ,  
 $R_1=OSO_3H$  is the same meaning as is before defined;

LII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  
 $R_3=SO_3H$  is the same meaning as is before defined;

25 LIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=H$ ,  $R_2=NH_2$ ,  
 $R_3=OSO_3H$  is the same meaning as is before defined;

LIV. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  
 $R_4=SO_3H$  is the same meaning as is before defined;

LV. A compound as claimed in claim 1, wherein  $Z=NH_2$ ,  $R_1=R_3=H$ ,  $R_2=NH_2$ ,  
 $R_4=OSO_3H$  is the same meaning as is before defined;

20 LVI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=$   
 $NHSO_3H$  is the same meaning as is before defined;

LVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=H$ ,  $R_2=$   
 $CH_2SO_3H$  is the same meaning as is before defined;

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LVIII. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

LIX. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

5 LX. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=H, R<sub>2</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

LXI. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>3</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

10 LXII. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>4</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>3</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

LXIII. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>4</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

LXIV. A compound as claimed in claim 22, wherein Z=NH<sub>2</sub>, R<sub>1</sub>=R<sub>3</sub>=H, R<sub>2</sub>=NH<sub>2</sub>, R<sub>4</sub>=OSO<sub>3</sub>H is the same meaning as is before defined.

15 35. Use of the composition as claimed in claim 22, wherein novel sulfonic acid / sulfate derivatives of the formulae ZOC-CR<sub>5</sub>R<sub>6</sub>-CR<sub>3</sub>R<sub>4</sub>-CR<sub>1</sub>R<sub>2</sub>-COOH, wherein: Z=OH or NH<sub>2</sub>, R<sub>1</sub>, to R<sub>6</sub> denotes H, NH<sub>2</sub>, SO<sub>3</sub>H, or OSO<sub>3</sub>H, CH<sub>2</sub>-SO<sub>3</sub>H, CH<sub>2</sub>-OSO<sub>3</sub>H, NHSO<sub>3</sub>H

XXXVII. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=NHSO<sub>3</sub>H is the same meaning as is before defined;

20 XXXVIII. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=CH<sub>2</sub>SO<sub>3</sub>H is the same meaning as is before defined;

XXXIX. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=CH<sub>2</sub>OSO<sub>3</sub>H is the same meaning as is before defined;

25 XL. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=SO<sub>3</sub>H is the same meaning as is before defined;

XLI. A compound as claimed in claim 22, wherein Z=OH, R<sub>2</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>1</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

XLII. A compound as claimed in claim 22, wherein Z=OH, R<sub>1</sub>=R<sub>3</sub>=R<sub>4</sub>=R<sub>5</sub>=R<sub>6</sub>=H, R<sub>2</sub>=OSO<sub>3</sub>H is the same meaning as is before defined;

30

XLIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

XLIV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

5 XLV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

XLVI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;

XLVII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=H$ ,  $R_2=$   
10  $NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

XLVIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=H$ ,  $R_2=$   
 $NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

XLIX. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=H$ ,  $R_2=$   
15  $NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

1. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=H$ ,  $R_2=$   
 $NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

2. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=$   
20  $NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;

3. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=$   
 $NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

4. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=H$ ,  $R_2=$   
25  $NH_2$ ,  $R_6=SO_3H$  is the same meaning as is before defined;

5. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=NHSO_3H$  is the same meaning as is before defined;

6. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=$   
30  $R_5=R_6=H$ ,  $R_1=CH_2SO_3H$  is the same meaning as is before defined;

LVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
5  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;

LVIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
10  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;

LIX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
15  $R_2=R_3=R_4=R_5=R_6=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;

LX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
20  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

LXI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
25  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

LXII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
30  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

LXIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
35  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

LXIV. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  
40  $R_1=R_3=R_4=R_5=R_6=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;

LXV. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=H$ ,  
45  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

LXVI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=H$ ,  
50  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

LXVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_6=H$ ,  
55  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

LXVIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_6=H$ ,  
60  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

LXIX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;

LXX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_3=R_6=H$ ,  $R_2=NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

5 LXXI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=H$ ,  $R_2=NH_2$ ,  $R_6=SO_3H$  is the same meaning as is before defined;

LXXII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_4=H$ ,  $R_2=NH_2$ ,  $R_6=OSO_3H$  is the same meaning as is before defined.

36. Use of the composition as claimed in claim 22, wherein novel sulfonic acid / sulfate derivatives of the formulae  $ZOC-CR_7R_8-CR_5R_6-CR_3R_4-CR_1R_2-COOH$ , wherein:  $Z=OH$  or  $NH_2$ ,  $R_1$ , to  $R_8$  denotes  $H$ ,  $NH_2$ ,  $SO_3H$ , or  $OSO_3H$ ,  $CH_2-SO_3H$ ,  $CH_2-OSO_3H$ ,  $NHSO_3H$

10 XLIV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=NHSO_3H$  is the same meaning as is before defined;

15 XLV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=-CH_2SO_3H$  is the same meaning as is before defined;

XLVI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;

20 XLVII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;

XLVIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_2=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;

25 XLIX. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

L. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

LI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=CH_2OSO_3H$  is the same meaning as is before defined;

20 LII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

30

LIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

LIV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=H$ ,  $R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

5 LV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

LVI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

10 LVII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_4=OSO_3H$  is the same meaning as is before defined;

LVIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=SO_3H$  is the same meaning as is before defined;

15 LIX. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_5=OSO_3H$  is the same meaning as is before defined;

LX. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=SO_3H$  is the same meaning as is before defined;

LXI. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_6=OSO_3H$  is the same meaning as is before defined;

20 LXII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=SO_3H$  is the same meaning as is before defined;

LXIII. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=H$ ,  $R_2=NH_2$ ,  $R_7=OSO_3H$  is the same meaning as is before defined;

25 LXIV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=SO_3H$  is the same meaning as is before defined;

LXV. A compound as claimed in claim 22, wherein  $Z=OH$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=H$ ,  $R_2=NH_2$ ,  $R_8=OSO_3H$  is the same meaning as is before defined;

LXVI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=$  5  $R_7=R_8=H$ ,  $R_1=NHSO_3H$  is the same meaning as is before defined;

LXVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=$   $R_7=R_8=H$ ,  $R_1=CH_2SO_3H$  is the same meaning as is before defined;

LXVIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=$  10  $R_7=R_8=H$ ,  $R_1=CH_2OSO_3H$  is the same meaning as is before defined;

LXIX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=$   $R_5=R_6=R_7=R_8=H$ ,  $R_1=SO_3H$  is the same meaning as is before defined;

LXX. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_2=R_3=R_4=R_5=R_6=$  15  $R_7=R_8=H$ ,  $R_1=OSO_3H$  is the same meaning as is before defined;

LXXI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=$   $R_7=R_8=H$ ,  $R_2=NHSO_3H$  is the same meaning as is before defined;

LXXII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=$  20  $R_7=R_8=H$ ,  $R_2=CH_2SO_3H$  is the same meaning as is before defined;

LXXIII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=$   $R_5=R_6=R_7=R_8=H$ ,  $R_2=SO_3H$  is the same meaning as is before defined;

LXXIV. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_4=R_5=R_6=$  25  $R_7=R_8=H$ ,  $R_2=OSO_3H$  is the same meaning as is before defined;

LXXV. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=$   $R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=SO_3H$  is the same meaning as is before defined;

LXXVI. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_4=R_5=R_6=$  30  $R_7=R_8=H$ ,  $R_2=NH_2$ ,  $R_3=OSO_3H$  is the same meaning as is before defined;

LXXVII. A compound as claimed in claim 22, wherein  $Z=NH_2$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=$  35  $H$ ,  $R_2=NH_2$ ,  $R_4=SO_3H$  is the same meaning as is before defined;

LXXVIII. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_3=R_5=R_6=R_7=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_4=\text{OSO}_3\text{H}$  is the same meaning as is before defined;

LXXIX. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_4=R_3=R_6=$  5  $R_7=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_5=\text{SO}_3\text{H}$  is the same meaning as is before defined;

LXXX. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_4=R_3=R_6=$   $R_7=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_5=\text{OSO}_3\text{H}$  is the same meaning as is before defined;

LXXXI. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_3=R_5=R_4=$   $R_7=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_6=\text{SO}_3\text{H}$  is the same meaning as is before defined;

10 LXXXII. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_3=R_5=R_4=$   $R_7=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_6=\text{OSO}_3\text{H}$  is the same meaning as is before defined;

LXXXIII. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_7=\text{SO}_3\text{H}$  is the same meaning as is before defined;

15 LXXXIV. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_4=R_3=R_6=R_5=R_8=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_7=\text{OSO}_3\text{H}$  is the same meaning as is before defined;

LXXXV. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_8=\text{SO}_3\text{H}$  is the same meaning as is 20 before defined;

LXXXVI. A compound as claimed in claim 22, wherein  $Z=\text{NH}_2$ ,  $R_1=R_3=R_5=R_4=R_7=R_6=\text{H}$ ,  $R_2=\text{NH}_2$ ,  $R_8=\text{OSO}_3\text{H}$  is the same meaning as is before defined;

37. Use of the composition as claimed in claim 22, wherein said compound is non-  
25 toxic salts selected from the group consisting of:

I [L- Aspartic acid, N-Sulfonic acid],

II [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],

III [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],

IV [1 $\alpha$ ,2-carboxy ethane sulfonic acid],

30 V [1 $\alpha$ ,2-carboxy ethane sulfate],

- VI [D-aspartic acid, N-sulfonic acid],
- VII [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],
- VIII [2 $\beta$ ,3-carboxy,propane-1-sulfate],
- IX [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],
- 5 X [1 $\beta$ ,2-carboxy ethane-1-sulfate],
- XI [D-aspartic acid, 3 $\alpha$  -sulfonic acid],
- XII [D-aspartic acid, 3 $\alpha$ -sulfate],
- XIII [D-aspartic acid, 3 $\beta$ -sulfonic acid],
- XIV [D-aspartic acid, 3 $\beta$ -sulfate],
- 10 XV [L-asparagine, N-sulfonic acid],
- XVI [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XVII [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XVIII [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XIX [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],
- 15 XX [L-asparagine, 3 $\alpha$ -sulfonic acid],
- XXI [L-asparagine, 3 $\alpha$ -sulfate],
- XXII [L-asparagine, 3 $\beta$ -sulfonic acid],
- XXIII [L-asparagine, 3 $\beta$ -sulfate],
- XXIV [D-asparagine, N-sulfonic acid],
- 20 XXV [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXVI [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXVII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],
- XXVIII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],
- XXIX [D-asparagine, 3 $\alpha$ -sulfonic acid],
- 25 XXX [D-asparagine, 3 $\alpha$ -sulfate],
- XXXI [D-asparagine, 3 $\beta$ -sulfonic acid],
- XXXII [D-asparagine, 3 $\beta$ -sulfate],
- XXXIII [L-glutamic acid, N-sulfonic acid],
- XXXIV [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],
- 30 XXXV [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],

XXXVI [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],  
XXXVII [1 $\alpha$ , 3-dicarboxy, propane sulfate],  
XXXVIII [1 $\beta$ , 3-dicarboxy, propane sulfate],  
XXXIX [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],

5 38. Use of the composition as claimed in claim 22, wherein said compound is non-toxic salts selected from the group consisting of:

I [D-glutamic acid, N-sulfonic acid],  
II [2 $\beta$ , 4-dicarboxy, butane-1-sulfonic acid],  
III [2 $\beta$ , 4-dicarboxy, butane-1-sulfate],

10 IV [D-glutamic acid, 3 $\alpha$ -sulfonic acid],  
V [D-glutamic acid, 3 $\alpha$ -sulfate],  
VI [D-glutamic acid, 3 $\beta$ -sulfonic acid],  
VII [D-glutamic acid, 3 $\beta$ -sulfate],  
VIII [D-glutamic acid, 4 $\alpha$ -sulfonic acid],

15 IX [D-glutamic acid, 4 $\alpha$ -sulfate],  
X [D-glutamic acid, 4 $\beta$ -sulfonic acid],  
XI [D-glutamic acid, 3 $\beta$ -sulfate],  
XII [L-glutamine, N-sulfonic acid],  
XIII [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],

20 XIV [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],  
XV [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],  
XVI [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],  
XVII [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],  
XVIII [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],

25 XIX [D-glutamine, N-sulfonic acid],  
XX [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],  
XXI [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],  
XXII [D-glutamine, 3 $\alpha$ -sulfonic acid],  
XXIII [D-glutamine, 3 $\alpha$ -sulfate],

30 XXIV [D-glutamine, 3 $\beta$ -sulfonic acid],

- XXV [D-glutamine, 3 $\beta$ -sulfate],
- XXVI [D-glutamine, 4 $\alpha$ -sulfonic acid],
- XXVII [D-glutamine, 4 $\alpha$ -sulfate],
- XXVIII [D-glutamine, 4 $\beta$ -sulfonic acid],
- 5 XXIX [D-glutamine, 4 $\beta$ -sulfate],
  - XXX [L-homoglutamic acid, N-sulfonic acid],
  - XXXI [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],
  - XXXII [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],
  - XXXIII [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],
- 10 XXXIV [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],
  - XXXV [D-homoglutamic acid, N-sulfonic acid],
  - XXXVI [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],
  - XXXVII [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],
  - XXXVIII [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],
- 15 XXXIX [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],
  - 39. Use of the composition as claimed in claim 22, wherein said compound is non-toxic salts selected from the group consisting of:
    - I [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],
    - II [D-homoglutamic acid, 3 $\alpha$ -sulfate],
  - 20 III [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],
  - IV [D-homoglutamic acid, 3 $\beta$ -sulfate],
  - V [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],
  - VI [D-homoglutamic acid, 4 $\alpha$ -sulfate],
  - VII [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],
- 25 VIII [D-homoglutamic acid, 4 $\beta$ -sulfate],
  - IX [D-homoglutamic acid, 5 $\alpha$ -sulfate],
  - X [D-homoglutamic acid, 5 $\alpha$ -sulfate],
  - XI [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],
  - XII [D-homoglutamic acid, 5 $\beta$ -sulfate],
- 30 XIII [L-homoglutamine, N-sulfonic acid],

- XIV [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],
- XV [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],
- XVI [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XVII [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],
- 5 XVIII [D-homoglutamine, N-sulfonic acid],
  - XIX [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],
  - XX [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfonic acid],
  - XXI [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfate],
  - XXII [D-homoglutamine, 3 $\alpha$ -sulfonic acid],
- 10 XXIII [D-homoglutamine, 3 $\alpha$ -sulfate],
  - XXIV [D-homoglutamine, 3 $\beta$ -sulfonic acid],
  - XXV [D-homoglutamine, 3 $\beta$ -sulfate],
  - XXVI [D-homoglutamine, 4 $\alpha$ -sulfonic acid],
  - XXVII [D-homoglutamine, 4 $\alpha$ -sulfate],
- 15 XXVIII [D-homoglutamine, 4 $\beta$ -sulfonic acid],
  - XXIX [D-homoglutamine, 4 $\beta$ -sulfate],
  - XXX [D-homoglutamine, 5 $\alpha$ -sulfonic acid],
  - XXXI [D-homoglutamine, 5 $\alpha$ -sulfate],
  - XXXII [D-homoglutamine, 5 $\beta$ -sulfonic acid] and
- 20 XXXIII [D-homoglutamine, 5 $\beta$ -sulfate].

40. Use of the composition as claimed in claim 22, wherein said compound is selected from the group consisting of aspartic acid, asparagine and corresponding de-amino analogs:

- I [L- Aspartic acid, N-Sulfonic acid],
- 25 II [2 $\alpha$ ,3-dicarboxy, propane-1-sulfonic acid],
- III [2 $\alpha$ ,3-dicarboxy, propane-1-sulfate],
- IV [1 $\alpha$ ,2-carboxy ethane sulfonic acid],
- V [1 $\alpha$ ,2-carboxy ethane sulfate],
- VI [D-aspartic acid, N-sulfonic acid],
- 30 VII [2 $\beta$ ,3-carboxy,propane-1-sulfonic acid],

VIII [2 $\beta$ ,3-carboxy,propane-1-sulfate],  
IX [1 $\beta$ ,2-carboxy ethane-1-sulfonic acid],  
X [1 $\beta$ ,2-carboxy ethane-1-sulfate],  
XI [D-aspartic acid, 3 $\alpha$  -sulfonic acid],  
5 XII [D-aspartic acid, 3 $\alpha$ -sulfate],  
XIII [D-aspartic acid, 3 $\beta$ -sulfonic acid],  
XIV [D-aspartic acid, 3 $\beta$ -sulfate],  
XV [L-asparagine,N-sulfonic acid],  
XVI [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],  
10 XVII [2 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],  
XVIII [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfonic acid],  
XIX [1 $\alpha$ -carboxy, 2-carboxamido, ethane sulfate],  
XX [L-asparagine, 3 $\alpha$ -sulfonic acid],  
XXI [L-asparagine, 3 $\alpha$ -sulfate],  
15 XXII [L-asparagine, 3 $\beta$ -sulfonic acid],  
XXIII [L-asparagine, 3 $\beta$ -sulfate],  
XXIV [D-asparagine, N-sulfonic acid],  
XXV [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],  
XXVI [2 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],  
20 XXVII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfonic acid],  
XXVIII [1 $\beta$ -carboxy, 2-carboxamido, ethane sulfate],  
XXIX [D-asparagine, 3 $\alpha$ -sulfonic acid],  
XXX [D-asparagine, 3 $\alpha$ -sulfate],  
XXXI [D-asparagine, 3 $\beta$ -sulfonic acid],  
25 XXXII [D-asparagine, 3 $\beta$ -sulfate],  
41. Use of the composition as claimed in claim 22, wherein said compound is selected from the group consisting of glutamic acid, glutamine and corresponding de-amino analogs:  
I [L-glutamic acid, N-sulfonic acid],  
30 II [2 $\alpha$ ,4-dicarboxy, butane-1-sulfonic acid],

- III [2 $\alpha$ , 4-dicarboxy, butane-1-sulfate],
- IV [1 $\alpha$ , 3-dicarboxy, propane sulfonic acid],
- V [1 $\alpha$ , 3-dicarboxy, propane sulfate],
- VI [1 $\beta$ , 3-dicarboxy, propane sulfate],
- 5 VII [1 $\beta$ , 3-dicarboxy, propane sulfonic acid],
- VIII [D-glutamic acid, N-sulfonic acid],
- IX [2 $\beta$ , 4-dicarboxy, butane-1-sulfonic acid],
- X [2 $\beta$ , 4-dicarboxy, butane-1-sulfate],
- XI [D-glutamic acid, 3 $\alpha$ -sulfonic acid],
- 10 XII [D-glutamic acid, 3 $\alpha$ -sulfate],
- XIII [D-glutamic acid, 3 $\beta$ -sulfonic acid],
- XIV [D-glutamic acid, 3 $\beta$ -sulfate],
- XV [D-glutamic acid, 4 $\alpha$ -sulfonic acid],
- XVI [D-glutamic acid, 4 $\alpha$ -sulfate],
- 15 XVII [D-glutamic acid, 4 $\beta$ -sulfonic acid],
- XVIII [D-glutamic acid, 3 $\beta$ -sulfate],
- XIX [L-glutamine, N-sulfonic acid],
- XX [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XXI [2 $\alpha$ -carboxy, 4-carboxamido, butane-1-sulfate],
- 20 XXII [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXIII [1 $\alpha$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXIV [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfate],
- XXV [1 $\beta$ -carboxy, 3-carboxamido, propane-1-sulfonic acid],
- XXVI [D-glutamine, N-sulfonic acid],
- 25 XXVII [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfonic acid],
- XXVIII [2 $\beta$ -carboxy, 4-carboxamido, butane-1-sulfate],
- XXIX [D-glutamine, 3 $\alpha$ -sulfonic acid],
- XXX [D-glutamine, 3 $\alpha$ -sulfate],
- XXXI [D-glutamine, 3 $\beta$ -sulfonic acid],
- 30 XXXII [D-glutamine, 3 $\beta$ -sulfate],

XXXIII [D-glutamine, 4 $\alpha$ -sulfonic acid],  
XXXIV [D-glutamine, 4 $\alpha$ -sulfate],  
XXXV [D-glutamine, 4 $\beta$ -sulfonic acid],  
XXXVI [D-glutamine, 4 $\beta$ -sulfate],  
5 XXXVII [L-homoglutamic acid, N-sulfonic acid],  
XXXVIII [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfonic acid],  
XXXIX [Pentane-2 $\alpha$ , 5-dicarboxy-1-sulfate],  
XL [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfonic acid],  
XLI [Butane-1 $\alpha$ , 4-dicarboxy-1-sulfate],  
10 42. Use of the composition as claimed in claim 22, wherein said compound is selected from the group consisting of homoglutamic acid, homoglutamine and corresponding de-amino analogs:  
I [D-homoglutamic acid, N-sulfonic acid],  
II [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfonic acid],  
15 III [Pentane-2 $\beta$ , 5-dicarboxy-1-sulfate],  
IV [Butane-1 $\beta$ , 4-dicarboxy-1-sulfonic acid],  
V [Butane-1 $\beta$ , 4-dicarboxy-1-sulfate],  
VI [D-homoglutamic acid, 3 $\alpha$ -sulfonic acid],  
VII [D-homoglutamic acid, 3 $\alpha$ -sulfate],  
20 VIII [D-homoglutamic acid, 3 $\beta$ -sulfonic acid],  
IX [D-homoglutamic acid, 3 $\beta$ -sulfate],  
X [D-homoglutamic acid, 4 $\alpha$ -sulfonic acid],  
XI [D-homoglutamic acid, 4 $\alpha$ -sulfate],  
XII [D-homoglutamic acid, 4 $\beta$ -sulfonic acid],  
25 XIII [D-homoglutamic acid, 4 $\beta$ -sulfate],  
XIV [D-homoglutamic acid, 5 $\alpha$ -sulfate],  
XV [D-homoglutamic acid, 5 $\alpha$ -sulfate],  
XVI [D-homoglutamic acid, 5 $\beta$ -sulfonic acid],  
XVII [D-homoglutamic acid, 5 $\beta$ -sulfate],  
30 XVIII [L-homoglutamine, N-sulfonic acid],

- XIX [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfonic acid],
- XX [Pentane-2 $\alpha$ -carboxy, 5-carboxamido-1-sulfate],
- XXI [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XXII [Butane-1 $\alpha$ -carboxy, 4-carboxamido-1-sulfate],
- 5 XXIII [D-homoglutamine, N-sulfonic acid],
- XXIV [Pentane-2 $\beta$ -carboxy, 5-carboxamido-1-sulfonic acid],
- XXV [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfonic acid],
- XXVI [Butane-1  $\beta$ -carboxy, 4-carboxamido-1-sulfate],
- XXVII [D-homoglutamine, 3 $\alpha$ -sulfonic acid],
- 10 XXVIII [D-homoglutamine, 3 $\alpha$ -sulfate],
- XXIX [D-homoglutamine, 3 $\beta$ -sulfonic acid],
- XXX [D-homoglutamine, 3 $\beta$ -sulfate],
- XXXI [D-homoglutamine, 4 $\alpha$ -sulfonic acid],
- XXXII [D-homoglutamine, 4 $\alpha$ -sulfate],
- 15 XXXIII [D-homoglutamine, 4 $\beta$ -sulfonic acid],
- XXXIV [D-homoglutamine, 4 $\beta$ -sulfate],
- XXXV [D-homoglutamine, 5 $\alpha$ -sulfonic acid],
- XXXVI [D-homoglutamine, 5 $\alpha$ -sulfate],
- XXXVII [D-homoglutamine, 5 $\beta$ -sulfonic acid] and
- 20 XXXVIII [D-homoglutamine, 5 $\beta$ -sulfate].